

The logo for New Jersey Maritime Resources, Department of Transportation, is located in the bottom left corner of the slide. It features a circular design with a red and white arrow pointing right, and the text "New Jersey Maritime Resources" and "Department of Transportation" around it.

# ***New Jersey Maritime Resources***

## ***Creative Solutions to Dredged Materials Management: The NJ Experience with Beneficial Use***

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Boston, Massachusetts***

Welcome

I will be sharing with you the NJ experience with managing contaminated sediments in a working port over the past decade.

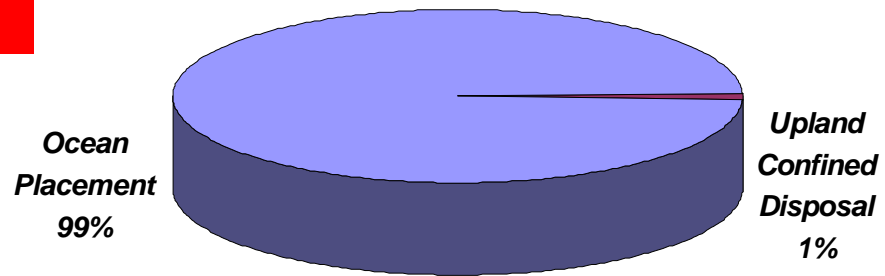
Before I start, I would like to acknowledge the hard work and creativity put into this program by people from multiple State agencies, the USEPA, the Army Corps, and most of all the staff (present and past) of NJ Maritime Resources and the staff of the Office of Dredging and Sediment Technology of the NJDEP.



In order to understand where we are it is important to understand how we got here.

The NY Bight is home to the Port of NY and NJ, the largest port on the east coast and home to over 15 million people. As one of the premier container ports and the largest petroleum distribution hubs in the country, the Port utilizes over 250 miles of engineered waterways. While modern maritime vessels typically require depths of 45 feet or more, the natural depth of the Port is only 19 feet. This means that between 2 and 4 million cubic yards of sediment must be dredged each year. As if this wasn't daunting enough, the Port also lies in the oldest industrialized watershed in the country. If a mistake could have been made handling chemicals in the country, it was made here first.....

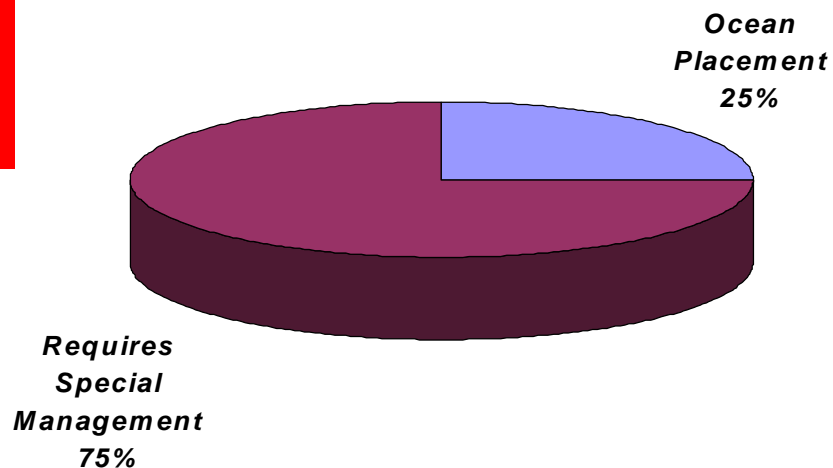
## ***Historical Dredged Material Management in NY/NJ Harbor***



Historically, dredged materials were taken to the ocean and disposed without fanfare. Following the MRPSA, testing was mandated prior to disposal. While some of the sediments were deemed unacceptable for ocean disposal, 99% of the volume was still easily disposed in one of several open water disposal sites in the Bight. The most famous of these, the Mud Dump, is a 2.2 square mile area approximately 5 miles off Sandy Hook, NJ which received over 68 million cubic yards from 1984 to 1996.

***1991: New “Green Book”***

***1992: New Regional Testing Manual***



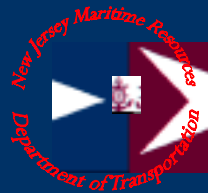
In 1991, the USEPA published the revised “Green Book”, followed in 1992 by a draft Regional Implementation Manual. Numerous studies commissioned by the NY District revealed that these new guidelines would result in approximately 75% of the dredged materials in the harbor would no longer meet ocean disposal requirements and would require special management. It was apparent that a storm was brewing.

## ***Projected Dredging Needs***

	<i>1999-2005</i>	<i>2006-2010</i>	<i>2011-2040</i>	
<b><i>Rock</i></b>	3.208	3.975	0	
<b><i>Clean</i></b>				
<b><i>O&amp;M</i></b>	6.373	2.573	37.159	(1.24/yr)
<b><i>Deepening</i></b>	26.265	15.73	1.58	
<b><i>Contaminated</i></b>				
<b><i>O&amp;M</i></b>	7.65	6.363	27.4	(0.91/yr)
<b><i>Deepening</i></b>	7.795	2.756	1.825	

To add to the concern, there were two major deepening projects planned for the coming decades, one to deepen the major arteries to 45 feet and the other to deepen to 50 feet. This would result in the need to move up to 5 million additional yards a year. Reliable, cost-effective management options had never been more necessary.

***1993: “Mudlock” begins***



In the middle of this, the Port Authority and the USEPA were faced with a lawsuit over disposal of material from a maintenance project at Port Newark/Port Elizabeth. Clean Ocean Action contended that the material did not meet the requirements for ocean disposal. A judge agreed and the Port Authority was forced to spend millions of dollars to place a 3 foot cap of clean sand over their mud at the Mud Dump. At the same time, Clean Ocean Action launched a creative and incessant public relations campaign to bring about an end to ocean disposal. They even reached out to the White House for help. As a result, political fear resulted in a regulatory gridlock we affectionately refer to as “Mudlock”

## ***1993 to 1995: Crisis Management***

- **Howland Hook Dredging (\$118/yd)**
- **Dredged Materials Management Team**
- **Dredged Materials Forum (HEP)**
- **Confined Aquatic Disposal (NBCDF)**
- **Formation of NJ Maritime Resources**
- **NJDEP Dredging Team**
- **USEPA/WRDA Decon**



Faced with an impending navigational crisis, not to mention spoiling the plans for port expansion, the States of NJ and NY along with the bistate Port Authority went into crisis management mode. Without a disposal option, the Port Authority was forced to haul stabilized dredged material from a NY container terminal by water to Texas and by rail to a landfill in Utah at a cost of \$118/cyd. The Governor of NJ set up a DMMT to study the issue. The USEPA and the Corps utilized the HEP structure to study the issue. Out of these forums, action items were developed. The Port Authority began engineering a confined aquatic disposal facility and the State of NJ appointed Frank McDonough of the DMMT as the Director of Maritime Resources and dredging czar. NJDEP set up a team of scientists to develop a sound regulatory structure, and the USEPA began to study decontamination technologies.

## ***The Beneficial Use Alternative: Brownfield Remediation***



As with most crises, entrepreneurs began to come out of the woodwork. It seemed that everyone had the solution to the Ports problems. One of the most intriguing came up when a Dutch developer proposed to stabilize dredged materials and utilize it as a fill material in a redevelopment project on a brownfield site on Newark Bay.



## ***The Beneficial Use Alternative: Abandoned Mine Reclamation***



Another idea was developing outside of the Port area. In the State of Pennsylvania, hundreds of historic strip mines have been identified as the reason for the loss of hundreds of miles of stream habitat due to acid mine drainage. While some of these mines do have bond monies for remediation, there are many that predate closure bonding laws. The USEPA has mandated that PA work to remediate these mines. It was proposed that amended dredged materials would be a suitable material for this task. PADEP and NJDEP signed an agreement to work together to make this idea a reality.

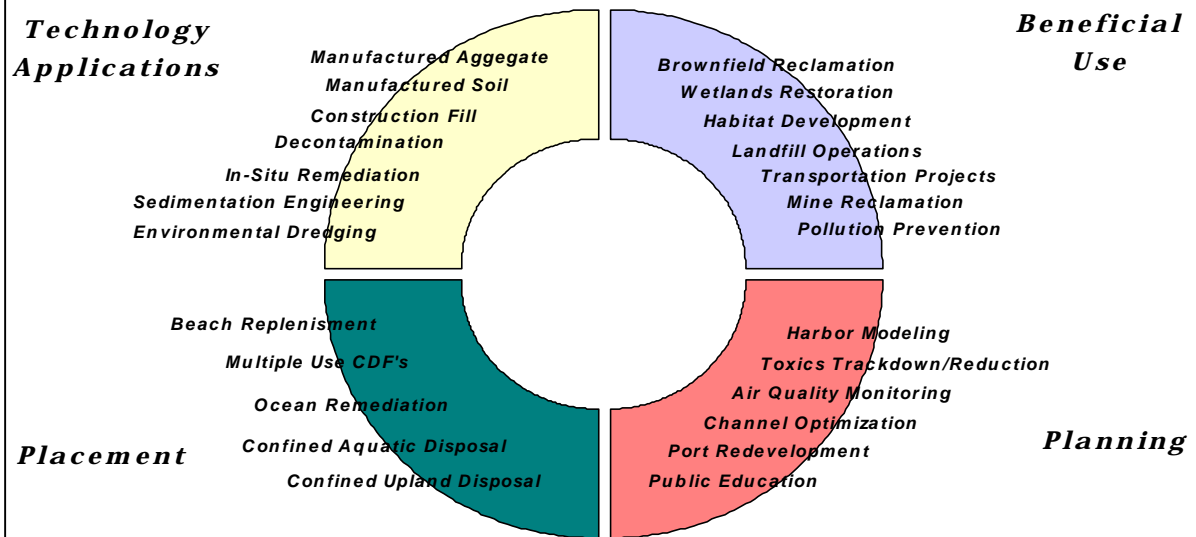
## ***1995 to 1998: A Plan Emerges***

- **DMMIWG/CARP**
- **Joint Dredging Plan - \$130 million**
- **Dredging Bond Act - \$205 million**
- **Regulatory Overhaul: Office of Dredging and Sediment Technology**
- **Brownfields Legislation**
- **Dredged Materials Management Plan - A Regional Consensus**



By 1996, a way out of “Mudlock” began to emerge. The DMMIWG was given permanent status in the HEP. The CCMP for the NY/NJ Harbor Estuary had a chapter dedicated to contaminated sediments. The CARP was formed to study ways to reduce pollution in sediments to reach goals of “clean enough for ocean disposal”. The NY/NJ Joint Dredging Plan laid out a series of actions and studies that were seen as critical and the PA put up \$130 m to fund the efforts. The NJ legislature crafted and the voters approved a \$205 m bond issue to fund dredging related projects. NJDEP finalized a dredging guidance manual and founded the ODST to run the program and streamline the regulatory process. SRP helped to draft the brownfields legislation: a landmark piece that encourages the use of dredged materials in remedial projects. And the Corps was nearing regional consensus on its DMMP.

# ***New Jersey's Comprehensive Management Strategy***



Last, but not least, the Office of NJ Maritime Resources was set up to develop policy for maritime issues in NJ and particularly to plot a course out of mudlock by implementing the NJ share of the Joint Plan. The result was a comprehensive management strategy that included sediment reduction, contaminant reduction, and beneficial use. This strategy ended up being thoroughly incorporated in the Corps' Implementation Plan for the DMMP which stated that dredged materials would be:

- 1) Reduce the level of contaminants and volume of material
- 2) Reduce the level or bioavailability of contaminants
- 3) Beneficially reuse as much as possible and
- 4) Dispose of only that material that cannot be beneficially reused.

## *Success Stories: OENJ Cherokee*

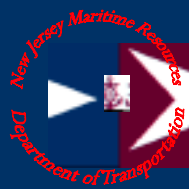


But would it work?

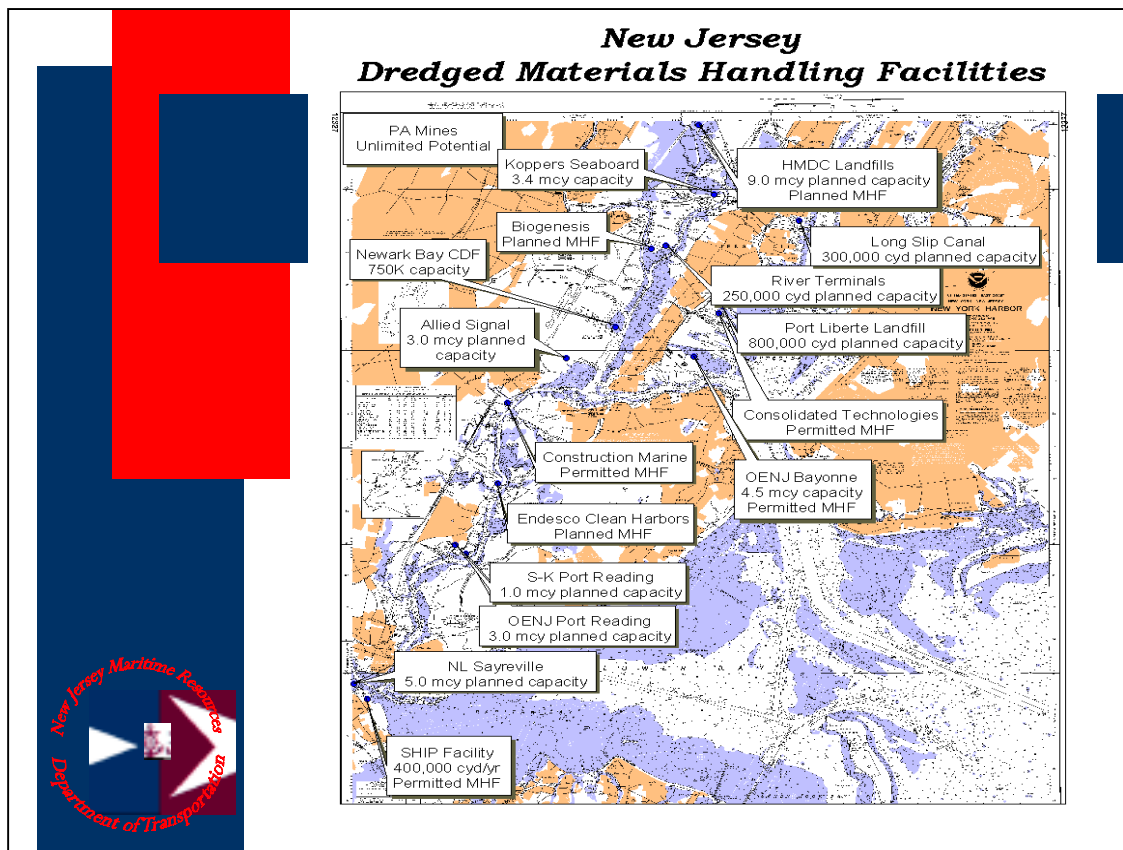
This was the former Old Elizabeth landfill. Approximately 500,000 cubic yards of dredged material were placed here and a parking lot built over it. Leachate collection and caps were placed to control contamination from the landfill. Over 20 acres of wetlands were built, making this the largest contiguous area in Newark Bay. The land was sold to build a mall and office complex that provides 5,000 jobs and tax revenue of over \$6 million. In addition, 80,000 yds of material was placed here in late 1998 to build engineering test berms to evaluate the use of amended dredged materials in transportation projects.

However, critics charged that this was a flash in the pan. We need a permanent facility.

## ***Success Stories: Consolidated Technologies***



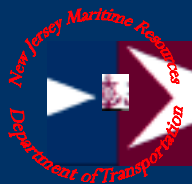
Earlier this year, we got just that. Consolidated Technologies signed agreements with Hugo Neu Schnitzer East, a Jersey City scrap metal recycling operation, to site a permanent dredged material processing facility. The facility is located right on the Claremont Channel and is capable of processing 5,000 cubic yards per day in its current configuration. Whats more, HNSE also had tested Propat, a product made from shredded car interiors, for its use as an additive to stabilize dredged material. The facilities first job was to prepare a test plot with Propat amended dredged materials. To date, CTI has processed over 100,000 cubic yards and shipped it to the Bark Camp mine reclamation site in central PA. But, the naysayers still cried: we need more capacity, more sites, more options!!!!



Based on the successes to date, numerous other sites have been proffered, and many permitted throughout the Port.



## ***OENJ Bayonne: 4-5 mcy capacity***



OENJ's next project is a brownfield/landfill project in Upper New York Bay in view of the Manhattan skyline. This site is currently permitted to take 4.5 mcy of amended dredged materials. A recently built processing station is engineered to deliver a whopping 20,000 cubic yards per day.

When completed, the site will be crafted into an 18-hole golf course. FORE!!!

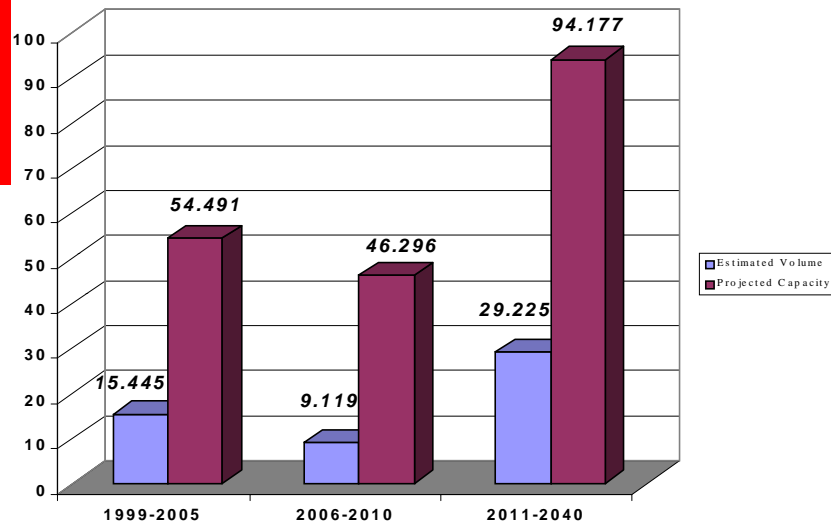
## ***NL Sayreville: 5 mcy capacity***



As the Port looks optimistically to the future, the need for expansion sites is once again in the forefront. Brownfields offer the best opportunity for expansion without the habitat losses that traditional fast land development generates. Combining this with additional capacity for dredged materials management will result in the kind of win-win scenarios that make everyone feel warm and fuzzy.



## *Capacity for Contaminated Dredged Materials*



So, do we have enough room for all this mud? Actually, yes. And more. Even with the volumes from the deepening projects we will have more than enough capacity. Recent developments on the ocean disposal front appear to indicate that we will need even more capacity upland. Well, we're ready.

## ***Ongoing Initiatives***

- **Contaminant Assessment Reduction Program (CARP)**
- **Hudson-Raritan Restoration (HEP)**
- **Transportation Initiatives**
- **NJ Processing Facility**
- **Sediment Decontamination Technologies (EPA/NJMR)**

There are a number of things that are going on to make that vision a reality and to continue to build a buffer against a recurrence of “mudlock”. The State is working closely with the Harbor Estuary Program to develop strategies to reduce toxic inputs to the harbor and begin the long-needed process of remediation. The State is exploring the use of amended dredged materials in transportation projects. If the engineers approve, the State will be building its own processing facility to produce manufactured fill for transportation initiatives such as Portway. But what happens when we run out of brownfields, roadways, and mitigation projects? That brings us to my favorite project, DECON.

## ***Decontamination Technologies***

- **JCI/Upcycle~Rotary Kiln; Lightweight Aggregate**
- **ENDESCO Clean Harbors~Rotary Kiln; Blended Cement**
- **BGW~Biogenesis® Sediment Washing; Manufactured Soil**
- **NUI Environmental~Big Blue® Sediment Washing; Manufactured Soil**
- **BEM Systems~Georemediation®; Manufactured Soil**

Nearly 8 years ago, the USEPA, under authorization from WRDA, began quietly working on developing technologies for reliably and economically decontaminating sediments. The dredging Bond Act that NJ voters approved in 1996 also mandated investigation of decontamination technologies as one of the solutions to the dredging crisis. So, rather than reinvent the wheel, we have partnered with the USEPA to further their research and determine if the technologies are suitable for large scale processing of dredged materials. The State's goal is to encourage building of several manufacturing operations that produce a beneficial use product from navigational dredged materials at a large (500K/yr) scale, at a cost that is competitive with alternatives (29/yd). Both agencies are also hoping that the costs of environmental dredging will go down due to the economies of scale achieved from the navigation program. Make sure to check out Eric's poster for details.

## ***Remaining Challenges***

- **Streamline Contracting**
- **Improve Planning**
- **Improve Dredging Technology**
- **Cost Reduction**
- **Contaminant Reduction**
- **Sediment Reduction**
- **Comprehensive Cooperation**

But identification and planning are the easy part. As for implementation, we are still faced with some serious challenges. Recent events have shown us that federal contracting procedures need to be changed to accommodate upland beneficial use; we need to better coordinate dredging schedules with the needs of upland facilities; we need to improve dredging technology particularly with regards to water reduction. And we need to keep the costs down. The federal government has set the federal standard at the cost of confined aquatic disposal (\$29/cyd). While processing and placement costs are coming in at \$29, the increased management of water and debris are increasing dredging costs. We need to reduce our dredging needs wherever possible and accelerate our programs to reduce pollutant inputs and initiate important remediation projects such as the Passaic River. And, probably the hardest thing of all, we all need to work together as States and as people - not an easy job for the ever devisive NY/NJ harbor.



But, when we are successful, we will not only have the largest, most modern container port in the country, but we will also have the economic wherewithall to clean up 150 years of contamination so my friend here can breath easy again.